NIEHS
National Institute of Environmental Health Sciences

SBIR/STTR Programs at NIEHS

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U.S. Department of Health and Human Services
National Institutes of Health
National Institute of Environmental Health Sciences

- SBIR – supports R/R&D by domestic small business for developing technology with potential for commercialization.
- Currently, five Federal agencies participate in the STTR program: DOD, DOE, DHHS (NIH), NASA and NSF.
- NIH SBIR grants - $616 million (FY10)
- NIH STTR grants - $74 million

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SBIR Program Overview

Small Business Innovation Research (SBIR)

2.5% Set-aside program for small business concerns to engage in federal R&D -- with potential for commercialization.

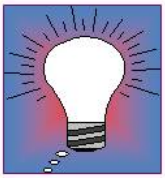
Small Business Technology Transfer (STTR)

0.3% Set-aside program to facilitate cooperative R&D between small business concerns and U.S. research institutions -- with potential for commercialization.

SBIR/STTR: Three Phase Program

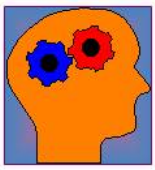
PHASE I

- Feasibility Study
- $150K and 6- 12 month



PHASE II

- Full Research/R&D
- $1 M and 2-year Award



PHASE III

- Commercialization Stage
- Use of non-SBIR/STTR Funds

SBIR AND STTR PROGRAMS
CRITICAL DIFFERENCES

- **Research Partner**

SBIR: Permits research institution partners

[Outsource ~ 33% Phase I and 50% Phase II R&D]

STTR: Requires research institution partners (e.g., universities)

[40% small business concerns (for-profit) and 30% U.S. research institution (non-profit)]

AWARD ALWAYS MADE TO SMALL BUSINESS

NIEHS SBIR/STTR Programs

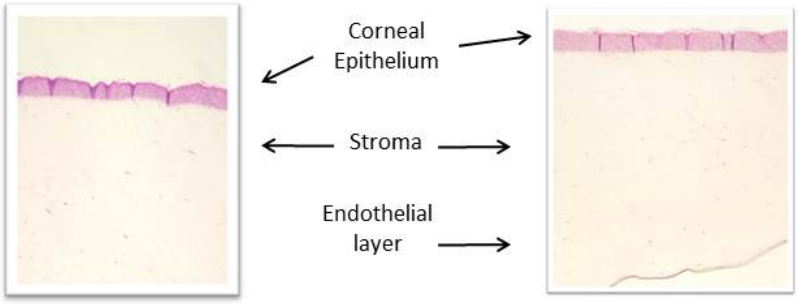
- Emphasis is on the development of new and novel approaches using state-of-the-art technologies:

  - **Improved test systems for prioritization and safety**
  - **Tools for improved exposure assessment**
  - **Technologies for measuring internal dose of environmental agent**
  - **Hazardous substances detection and remediation program**

SBIR/STTR grants

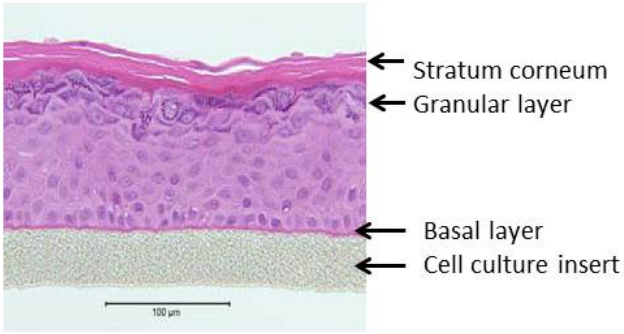
Type	SBIR	STTR	Technology
3D human tissue culture	5	0	Organotypic models for skin, eye, liver
Technology for animal tox studies	5	0	Imaging systems for small animals, zebrafish, and *C. elegans*. Metabolism assays in zebrafish and rodents
Novel assays	7	1	HT assay for nephrotoxicants, mouse ES cell assay for reproductive tox., Pig-A mutation assay, transfected cell lines for CYP expression, Human ES stem cell assay for tox screening
Sensors	15	2	Wearable devices or benchtop instruments for chemical detection in air, water, and consumer products
Biomonitoring	8	2	Novel technologies for measuring pesticides, metals, PBDEs, etc. in blood, urine, and saliva
Remediation	6	1	Phytoremediation, microwave remediation, water purification (As, Pb, perchlorates, nitrates

Human Corneal Model for Ocular Irritation Assay (MatTek)



- CFT model
- Morphology, Viability, Barrier function
- Irritants/non-irritants

Reconstructed Skin Micronucleus Genotoxicity Assay (MatTek)



- EpiDerm 3D skin model
- Screen for MN
- Automated scoring

Current NIEHS SBIR Contracts

- Development of Mid to High-Throughput Toxicological Tests Using Model Organisms
  - Physical Sciences – OCT imaging of zebrafish for developmental toxicants
- Monitoring in vivo Gene Expression Changes After Exposure to Toxicants in Caenorhabditis elegans
  - Knudra– transgenic *C. elegans* lines to monitor gene transcription with toxicants
- Integrated Prediction Systems to Support Environmental Toxicological Assessments
  - Leadscope - User-friendly database for chemical/toxicology searches
- Incorporation of Metabolism into Quantitative High Throughput Screening (HTS) Assays
  - HT Genomics – qNPA assay for evaluating metabolism
- Development of Quantitative High Throughput Screens for the Detection of Chemicals That Modulate Gap Junctional Intercellular Communication
  - Detroit R&D – GFP reporter construct and siRNA to detect effects on GJIC

FY11 Contract Topics

- High Throughput Screening for Reactive Oxygen Species Mediating Toxicity
- Application of 'Omics' Technologies to Rodent Formalin-Fixed, Paraffin Embedded Tissue Samples
- Development of Sensitive Innovative Methods for Detecting and Assessing Pain and Distress in Laboratory Animals Used in Toxicological Research and Testing
- In Vitro 3D Tissue Models for Toxicity Testing (3D skin models)
- Development of Improved Biomarkers as Earlier Humane Endpoints for Ocular Safety Assessments (OCT imaging for Ocular injury)

Beyond the Omnibus Solicitation

Institute/Center Research Interests

- **NIH Guide for Grants and Contracts**
  - **Program Announcements (PAs)**
  - **Requests for Applications (RFAs)**

Weekly announcements of new initiatives
http://grants.nih.gov/grants/guide/index.html

NIEHS website
http://www.niehs.nih.gov/